Introduction to Hazardous Waste Regulations:

Waste Characterization and Generator Status

Michigan Department of Environmental Quality

Housekeeping

- All lines will be muted
- Questions can be sent to us via the question/chat box
- We will record webinar and post online

Introduction to Hazardous Waste Regulations:

Waste Characterization and Generator Status

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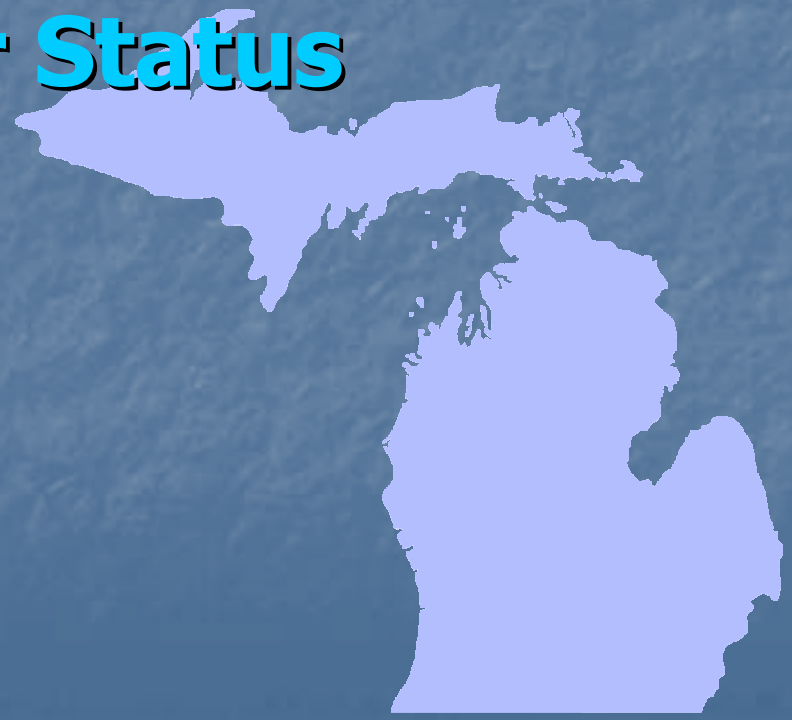


Environmental Assistance Center (EAC)

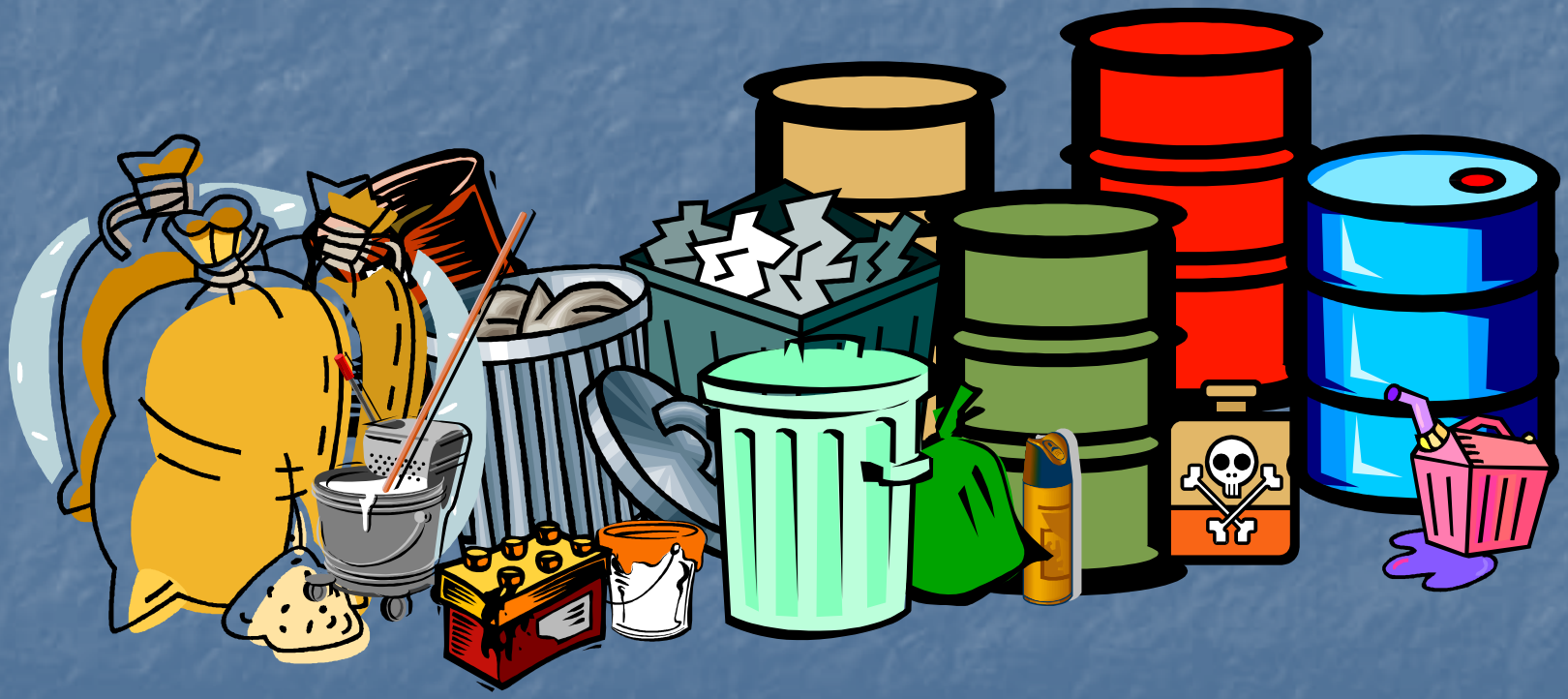
Phone: 1-800-NO2-WASTE
(1-800-662-9278)

Hours: 8:00 AM to 4:30 PM
Monday – Friday

Technical Assistance Services Include:

- Air
- Waste
- Water
- Wetlands
- Shoreline Development
- Brownfield Redevelopment
- Site Remediation
- Storage Tanks

WHAT TYPE OF WASTES DO I GENERATE?



Do I Need to Know All of This?

Hazardous waste regulations…

apply to all businesses, including municipalities, hospitals, & service industries, not just manufacturing industries.

are written broadly to address hazards posed by all waste streams.

Why Cover These Topics?

Hazardous waste regulations require each business to:

- evaluate the character & composition of their wastes.
- determine the total weight of all hazardous waste generated each month.
- determine their legal disposal options.

Why Cover These Topics?

Less hazardous waste = less regulation & more disposal options under the law.

There is no one best answer for how to dispose of waste for all businesses & locations.

Waste Characterization

Regulations requiring waste characterization:

Act 451, Michigan Natural Resources & Environmental Protection Act:

- Part 111, Hazardous Waste
- Part 121, Liquid Industrial Waste
- Part 115, Solid Waste
- Part 169, Scrap Tires

Act 368, Michigan Public Health Code:

- Part 138, Medical Waste Regulatory Act
- Part 2, Ionizing Radiation Rules

Federal Toxic Substance Control Act (TSCA)

Waste Characterization

Where do I start?

Perform a waste survey to identify what wastes are generated at your facility

Tour your entire facility and inventory all waste streams

Don't overlook identifying & characterizing ALL waste streams

Waste Survey

Drains

Discontinued lines

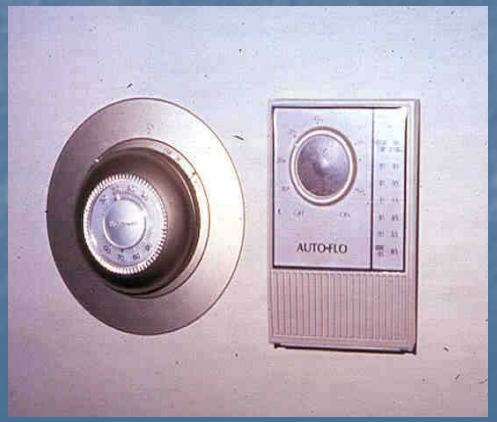
Waste Survey

Office Activities

Electronics

Batteries

Thermostats



Electric lamps

Waste Survey

Aerosol Cans

Can crushing & puncturing

Ignitable & could have TCLP issues

Waste Survey
Remodeling/demolition debris

Demolition debris

Gym flooring

Abrasive blasting

Waste Survey
Fleet Maintenance

Antifreeze & Mercury switches

Parts Washer

Used Oil

Waste Survey
Rags & Textiles

Management option to use recycling exemption: Commercially launder

Waste Survey

Laboratory Waste

Art Class Waste

A

A

Waste Characterization

Who does it?

- Do the waste characterization yourself
- Hire a consultant
- Use the disposal company services
- Use a combination of the above

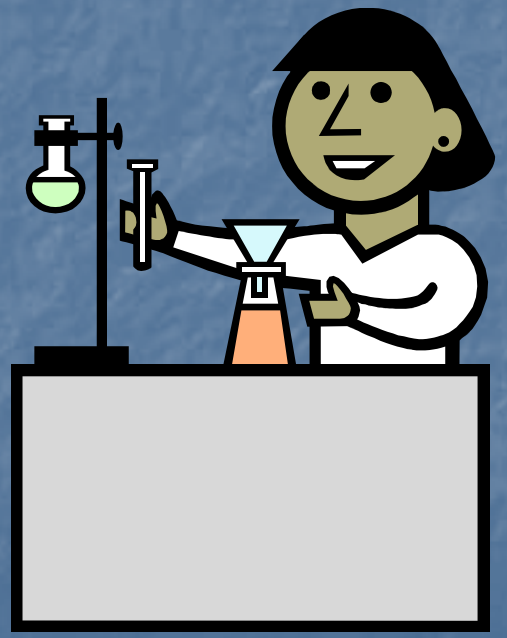
Waste Characterization

How do you do it?

Knowledge

- MSDS
- Facility Process Information
- Technical Information
- Manufacturer Information
- Hazardous Waste Listings

Testing



Waste Characterization
Basics

- **Characteristic Hazardous Waste (D wastes)**
  - A waste stream found to be ignitable, corrosive, reactive, and/or toxic by testing.
- **Listed Hazardous Waste (F, K, P & U wastes)**
  - A common waste stream known to be hazardous without testing.
- **Hazardous Waste Mixture Rule**
  - Mixture of a listed hazardous waste with other non-hazardous wastes is all a listed hazardous waste.
- **Hazardous Waste Derived From Rule**
  - Residues derived from treating a listed hazardous waste are a listed hazardous waste.

Waste Characterization
Basic Steps

1. Is waste listed? Review lists of waste types & codes in rules.
2. Is waste characteristic? Analytic test or by knowledge (MSDS, knowledge of process, etc.).
3. Does an exclusion or exemption apply?
4. Do other regulations apply? Liquid industrial or solid waste, etc.
5. Create & maintain records of characterization for at least 3 years from the date waste was last shipped offsite.
6. Re-characterize if there is a change in process or materials.

Waste Characterization

Step 1

Listed Hazardous Waste

Waste Characterization
What are listed hazardous wastes?

- F Codes (Table 203a) – wastes from non-specific sources (e.g. spent chlorinated solvents, metal treatment wastewaters & sludges).
- K Codes (Table 204a) – Wastes from specific industries including some Michigan only codes (e.g., petroleum refining & wood treatment wastes).
- P & U Codes (Table 205a-c) – Commercial chemical products, off-specification products, container and spill residues including some Michigan only U Codes (e.g., formaldehyde, parathion, benzene, DDT, xylene).
- *P Codes are all acutely hazardous.*

Waste Characterization

Listed Hazardous Waste Codes

Table 203a

EPA Hazardous Waste Number	Hazardous Waste From Nonspecific Sources	Hazard Code
F020	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the production or manufacturing use as a reactant, chemical intermediate, or component in a formulating process, of tri- or tetrachlorophenol or of intermediates used to produce their pesticide derivatives. This listing does not include wastes from the production of hexachlorophene from highly purified 2,4,5-trichlorophenol	(H)
F021	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the production or manufacturing use as a reactant, chemical intermediate, or component in a formulating process of pentachlorophenol or of intermediates used to produce its derivatives	(H)
F022	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the manufacturing use as a reactant, chemical intermediate, or component in a formulating process of tetra-, penta-, or hexachlorobenzenes under alkaline conditions	(H)
F023	Wastes, except wastewater and spent carbon from hydrogen chloride purification, from the production of materials on equipment previously used for the production or manufacturing use as a reactant, chemical intermediate, or component in a formulating process of tri- and tetrachlorophenols. This listing does not include wastes from equipment used only for the production or use of hexachlorophene from highly purified 2,4,5-trichlorophenol	(H)

Acutely hazardous when "H" appears in Hazard Code Column.

Waste Characterization

Step 2

Characteristic Hazardous Waste

Waste Characterization

What are characteristic hazardous wastes?

Characteristic Hazardous Waste Codes:

Ignitable - D001

Corrosive - D002

Reactive - D003

Toxic - D004 – D043 (Table 201a)

Severely Toxic – 001S - 007S
(Table 202, includes dioxins & furans)

Characteristic Hazardous Waste Common Tests

- **Flash point** – Used for testing Ignitability < 140 F (D001)
  - *Examples: paints, solvents*
- **pH** – Used for testing corrosivity ≤ 2 or ≥ 12.5 (D002)
  - *Examples: acids, bases*
- **Reactivity** – Test as required for DOT
  - classification for materials that are unstable at normal conditions, reacts violently with water, explode, and/or emit toxic gas (D003)
  - *Examples: lithium hydride & trichlorosilane*

Characteristic Hazardous Waste Common Tests

- **TCLP (Toxicity Characteristic Leaching Procedure)** Used for testing leaching potential for Table 201a hazardous constituents (D004-D043)
  - *Examples: Paints or sludges containing metals or MEK, contaminated media*
- **Total Halogens -** Used for testing used oils for chlorine, fluorine, bromine, etc. to determine if a "presumed" hazardous waste

Waste Characterization

Step 3

Exemptions and Exclusions

(Rules 202, 203, 204, 206, 207 and 228 of Part 111 -not all inclusive)

Waste Characterization
What are exemptions & exclusions?

- Wastewater discharges to POTW's that are ***approved*** by that sewer authority are exempted at the point of discharge to the sewer.

- Batteries, pesticides, mercury devices, electric lamps, pharmaceuticals, consumer electronics & antifreeze handled as Universal Waste enjoy a partial exemption.

- Wastes that are used or reused in a process to make a product are excluded provided there is no reclamation - *Beware of sham recycling & get DEQ concurrence on exemption. Supporting documents required.*

Waste Characterization
What are exemptions & exclusions?

- Laboratory samples are exempt until discarded
- Used oils that are recycled
- Petroleum contaminated media from leaking UST systems that fail the TCLP for D018 – D043 only & are being remediated under DEQ approval pursuant to Part 213
- Off-specification fuel (gasoline, kerosene, diesel, etc.) being recycled for use as fuel or burned as fuel

Waste Characterization
What are exemptions & exclusions?

- Materials remaining in manufacturing units that would otherwise be hazardous wastes - *If taken out of service the material becomes a hazardous waste (degreasers, paint pots).*
- Laundered rags that are reused that would otherwise be a hazardous waste
- Hazardous wastes from which precious metals are recovered (partial exemption)
- Dredge spoils from projects permitted by the US Army Corps of Engineers or DEQ

Waste Characterization
What are exemptions & exclusions?

- Recycled materials (**not all** see 40 CFR, Part 261 of RCRA, specifically 261.2, Table 1) - *Some reclaimed materials are not considered solid wastes under RCRA, although they may exhibit a haz waste characteristic (e.g., commercial chemical products, sludges and by-products). Also, commercial chemical products being speculatively accumulated are not solid wastes under RCRA.*
- Household waste, including single & multiple residences, hotels & motels, bunkhouses, ranger stations, crew quarters, campgrounds, picnic grounds, & day-use recreational areas
- Empty container residues

Empty Containers
(Rule 207)

<u>After</u> all *non-acute hazardous waste* or liquid industrial waste has been removed using common practices:

- No more than 1 inch or not more than 3.0% by weight of the total capacity of the container for containers less ≤ to 119 gallons
- No more than 1 inch or not more than 0.3% by weight of the total capacity of the container for containers > than 119 gallons

Empty Containers
(Rule 207)

Acute Hazardous or Severely Toxic Waste:

- Triple rinse with appropriate solvent or cleaned by proven equivalent method
- Remove inner liner that prevented contact with container
- If listed due to characteristic, empty if no longer exhibits the characteristic
- Rinse water/removed residue would be hazardous waste based on knowledge

Empty Containers
(Rule 207)

Compressed Gas:

- Container pressure is equal to atmospheric pressure
- Container is not clogged
- No audible liquids in container when shaken

Waste Characterization

Step 4

Liquid Industrial Waste

Waste Characterization

What is Liquid Industrial Waste?

(Part 121 of Act 451)

- Determine by using the Paint Filter Test, Method 9095 in EPA SW-846
- If there are any free liquids in the waste or if the waste is thinner than butter at or < 100 F, it should be managed as a liquid industrial waste.

Waste Characterization
What is Liquid Industrial Waste?
(Part 121 of Act 451)

- Liquid hazardous wastes from a CESQG
- Most antifreeze
- Some wastewater including most mobile power washing wastewater, carpet cleaning wastewater, food processing wastewaters
- Most sludges from trench drains or blind sumps (unless there's been a release making it a hazardous waste)
- Includes liquid wastes from other locations besides "industrial" sites (e.g. municipal, health care facilities, etc.)

Waste Characterization
What is Liquid Industrial Waste?
(Part 121 of Act 451)

Storm sewer cleanout waste

Grease trap waste

Most used oils being recycled

Off-specification fuels being recycled

Waste Characterization

Liquid Industrial Waste Codes

WASTE STREAM	WASTE CODE	CONSOLIDATED WASTE CODE
Mixed Solvents	007L	007LC
Pharmaceutical	014L	014LC
Crankcase Oil	017L	017LC
Coolants and Water Soluble Oils	019L	019LC
Other Oil	021L	021LC
Brine	022L	022LC
PCB	026L	026LC
Other wastes	029L	029LC
Antifreeze	030L	030LC
Storm Sewer Cleanouts	031L	031LC
Sanitary Sewer Cleanouts	032L	032LC
X-Ray/Photo Cleaning Solutions	033L	033LC
Water Based Cleaning Solutions	034L	034LC
Car Wash Sludges	035L	035LC
Grease Trap Wastes	036L	036LC

Waste Characterization

Step 5

Waste Characterization Record (Rule 307)

Waste Characterization

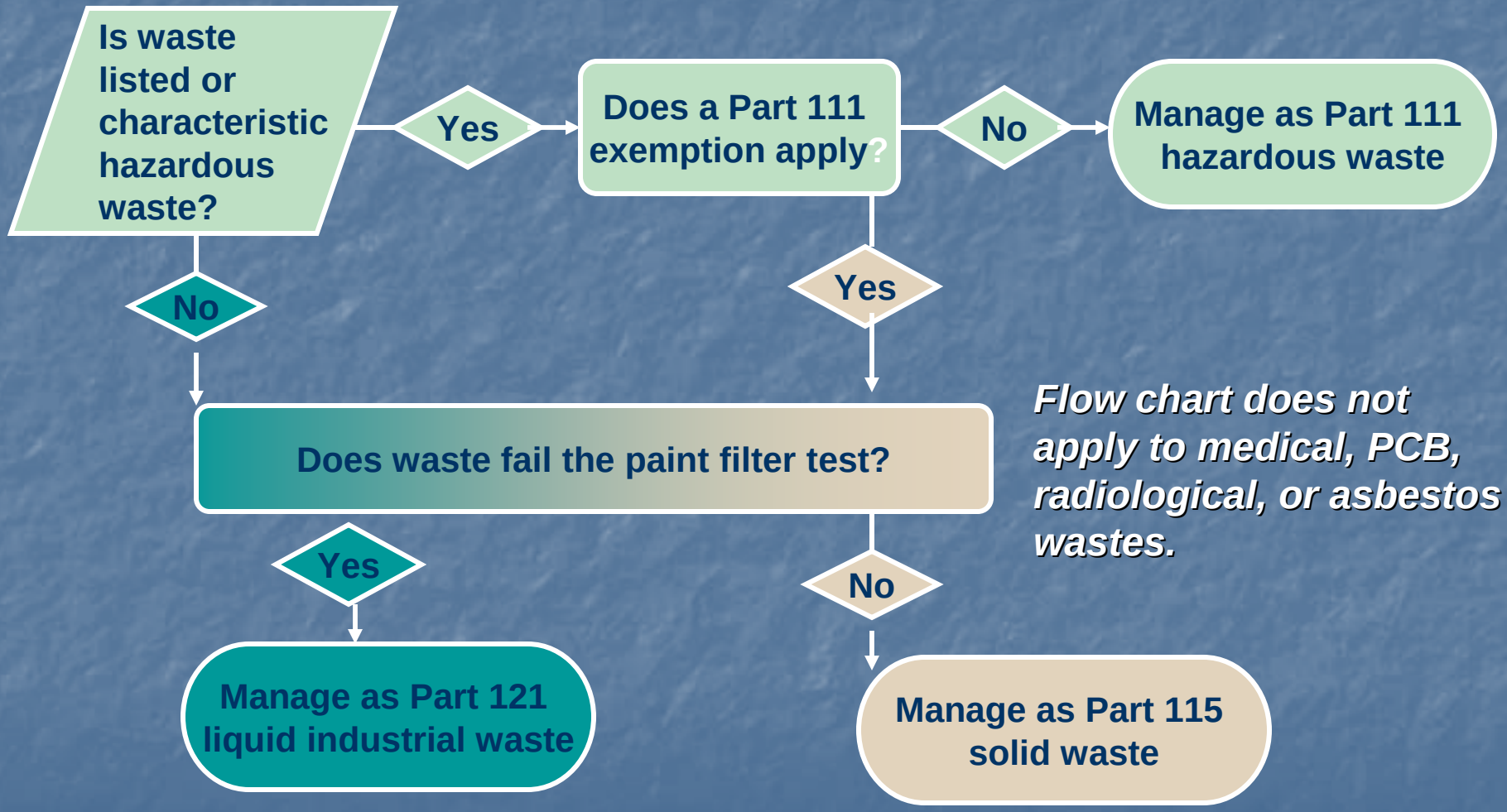
Waste Characterization Records

Records for *<u>each</u>* waste stream may include:

- Waste type/description
- Source of waste
- Test results
- Waste analyses records
- MSDS
- Sample procedure
- Representative sample information

Recharacterize if there is a process or materials change!

Waste Characterization



Flow chart does not apply to medical, PCB, radiological, or asbestos wastes.

Hazardous Waste Generator Status

Less Regulation

More Regulation

Conditionally Exempt Small Quantity Generator (CESQG)

Small Quantity Generator (SQG)

Large Quantity Generator (LQG)

Hazardous Waste Generator Status

Conditionally Exempt Small Quantity Generator (CESQG)

(Rule 205)

- Monthly hazardous waste generation < 220 lbs or ~ 1/2 drum. 
- Total hazardous waste accumulation always < 2200 pounds
- Wastes are properly disposed under other regulations
- Records of waste characterization and generator status are maintained for 3 years

Hazardous Waste Generator Status

Small Quantity Generator (SQG)

- Monthly hazardous waste generation 220 lbs – 2,200 lbs ~ 6 drums

- Total hazardous waste accumulation always < 13,200 pounds

Hazardous Waste Generator Status

Large Quantity Generator (LQG)

- Generates 2200 pounds non acute hazardous waste per month or
- Generates and accumulates 2.2 pounds acute or severely toxic waste

Hazardous Waste Generator Status

Calculating Amount of Hazardous Waste Generated

- Calculate the amount *generated*, not the amount *shipped*
- Calculate the amount in *pounds or kilograms*
- Include hazardous waste *treated and/or disposed on-site* unless it is hard piped to POTW
- Do not include hazardous waste managed as a *universal waste*
- Do not include waste specifically excluded from Part 111 (scrap metal being recycled, fuel being recycled, or POTW approved direct discharges)
- Do not include *liquid industrial waste and/or used oil*

Hazardous Waste Generator Status

Calculating Amount of Hazardous Waste Generated

- Review total/maximum amount of hazardous waste accumulated at any 1 time during the month
- Compare amount of hazardous waste generated and total accumulated during the month to the CESQG, SQG, and LQG definitions/limits
- Generator limits are found in Rule 306 of the Part 111 rules

NEED HELP?
RESOURCES

- ✓ Go to www.michigan.gov/deqwaste
- ✓ Contact the DEQ EAC at 1-800-662-9278
- ✓ Search the DEQ Publication Center
- ✓ Contact DEQ district waste inspection staff
- ✓ Contact hazardous waste vendors
- ✓ Contact waste consultants